



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,531	11/25/2003	George H. Hofmann	AD6935 USNA	5344

EXAMINER	
ASINOVSKY, OLGA	

ART UNIT	PAPER NUMBER
1796	

NOTIFICATION DATE	DELIVERY MODE
12/14/2007	ELECTRONIC

23906 7590 12/14/2007  
E I DU PONT DE NEMOURS AND COMPANY  
LEGAL PATENT RECORDS CENTER  
BARLEY MILL PLAZA 25/1128  
4417 LANCASTER PIKE  
WILMINGTON, DE 19805

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-Legal.PRC@usa.dupont.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/721,531	<b>Applicant(s)</b> HOFMANN, GEORGE H.	
	<b>Examiner</b> Olga Asinovsky	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                           | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Terminal Disclaimer*

1. The terminal disclaimer filed on September 24, 2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of Application Number 10/333,993 has been reviewed and is NOT accepted.
2. The filing date for pending case is not correct.

### *Double Patenting*

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1-19 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 (originally

filed) of copending Application No. 10/333,993. Although the conflicting claims are not identical, they are not patentably distinct from each other because a non-blocking chemically modified polyvinylbutyral pellet composition in claims 1-6 and 11-14 of copending Application is readable in the present claims 1-11 and 17-18. The process for converting polyvinylbutyral into pellets by a continuous process in the presence of at least one thermoplastic polymer in claims 7-10 of Application No. 10/333,993 is readable in the present process claims 12-16 and 18-19. The difference is that the present claims disclose a crosslinked polyvinylbutyral, whereas claims in Application No. 10/333,993 disclose a chemically modified polyvinylbutyral. It would have been obvious to one of ordinary skill in the art to use the process condition for producing a chemically modified polyvinylbutyral in the claims of Application No. 10/333,993 for being a crosslinked polyvinylbutyral in the present claims, because the same polymer having functional groups such as carboxylic acid and carboxylic acid esters is used in the present claims and claims of Application No. 10/333,993. Other difference is that the present claims disclose a discrete phase of the crosslinking polyvinylbutyral dispersed in the continuous phase of the thermoplastic elastomer composition, whereas claims of Application No. 10/333,993 disclose a chemically modified polyvinylbutyral in the pellets form, which is blended with at least one other non-reactive thermoplastic polymer (claim 14) of Application No. 10/333,993. The pellets form and a discrete phase are different wording under the same crosslinked PVB in the present claims and chemically modified PVB in claims of Application No. 10/333,993. It would have been obvious to one of ordinary skill in the art to use a process condition for blending a

chemically modified PVB in pellets form with at least one other non-reactive thermoplastic polymer in claim 10 of pending application 10/333,993 wherein a chemically modified PVB in pellets forms is readable for being a discrete phase of the analogous crosslinked PVB in the present claims, because the step of a dispersing in the continuous phase and a mixing the pellets that obtained by a continuous process with a thermoplastic polymer in claims of Application No. 10/333,993 is the same meaning for obtaining the analogous resultant product.

2. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lenox et al U.S. Patent 6,921,791.

Reference has been considered in the previous office action of 03/19/2007. All discussions are adequately set here.

The term "crosslinking polyvinylbutyral" in claim 1 can include any source for crosslinking of a PVB. A modified polyvinylbutyral before the crosslinking reaction can include any polyvinylbutyral including a plasticized polyvinylbutyral in the present claim

5, wherein hydroxyl-reactive groups are inherently present in light of the nature of a plasticized polyvinylbutyral.

Lenox discloses a product and a process for producing thermoplastic elastomer being the reaction product of a dynamically vulcanized blend consisting of (a) at least one epoxidized elastomer, (b) at least one ionomer such as an ethylene/(meth)acrylic acid copolymer and diluent polymer (c) that can be selected such as polyvinylbutyral (PVB), claim 1 at column 8, column 2, line 15; column 3, line 37. The epoxidized natural rubber is readable for being a thermoplastic polymer in the present claims 1-5, 9-19. The ionomer copolymer such as ethylene/(meth)acrylic acid copolymer is readable for being a crosslinking agent for the present claims 1-19, for being at least a "functional equivalent" of polycarboxylic acid having polar moiety in the present claims 5 and 13. The diluent polymer can be selected such as polyvinyl butyral for the present claims 1-19. The diluent polymer can be present in the amount from 5 to 80 wt.%. The resulting product is a thermoplastic elastomer that can be extruded, column 3, lines 49-63. The claimed process is readable in a method for making a thermoplastic elastomer in Lenox invention, column 3, lines 49-63, wherein the ingredients were combined and blended/mixed under temperature above 250 F to cause the reaction of the polymeric components, column 3, line 55. Reference discloses a dynamically vulcanized blend, column 1, line 56. The claimed term "crosslinking" is within the scope of the "reaction" in the extruder, because reference discloses the analogous ingredients and the analogous process condition under a "dynamically vulcanized blend" In Lenox invention, column 1, line 56. The thermoplastic elastomer comprises filler in an amount up to about 90% by

weight of the thermoplastic elastomer, column 2, lines 60-67. The thermoplastic polymer such as polyvinylchloride (column 1, line 19) is readable in the present claim 6. The epoxidized elastomers such as epoxidized EPDM, NBR and SBR are readable in the present claims 1, 5, 9-19 for being claimed thermoplastic polymer. The claimed "continuous phase" for a thermoplastic polymer and the discrete phase of the crosslinked PVB are depending on a process condition and the desired nature of a thermoplastic polymer. Lenox discloses a process condition wherein the ingredients are mixed/blended, that is readable in one step process condition in the present claim 12. A thermoplastic polymer and a temperature for mixing the ingredients are not critical in the present claims 1, 12 and 15.

Lenox does not call "dispersed as a discrete phase" for a PVB, nor does not disclose term "continuous phase" in the present claims 1, 12 and 15.

It would have been obvious to one of ordinary skill in the art to use a process condition for producing thermoplastic elastomer composition in Lenox invention wherein a mixture of polyvinylbutyral with a copolymer of ethylene/acrylic acid and an epoxidized elastomer is readable for producing claimed (resulting) thermoplastic elastomer composition such that the claimed "dispersed as a discrete phase" for a PVB in a continuous phase of a thermoplastic polymer is obtained in Lenox invention, because Lenox discloses analogous crosslinked and modified polyvinylbutyral, epoxidized elastomer and analogous method for mixing the ingredients in one step, wherein term

"continuous phase" in the present claims and mixture=blend of the ingredients in Lenox invention is the analogous meaning in the absence of the negative or unexpected effect. And because the crosslinked and modified non-blocking polyvinylbutyral composition being in a dispersed form is depending on the melting property of the desired thermoplastic polymer, and Lenox does disclose polyvinylchloride.

It would have been obvious to one of ordinary skill in the art to use a process condition for producing thermoplastic elastomer composition in Lenox invention wherein a thermoplastic polymer such as polyvinylchloride or other polymer(s) in the present claims 6-8 would be expected in Lenox invention as a non-reactive polymer as an effort to find alternative material to substitute filler wherein the selection of a thermoplastic polymer is depending on the desired application.

5. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lenox et al U.S. Patent 6,921,791 in view of Hofmann U.S. Patent 6,506,835.

6. References have been considered in the previously filed office action.

7. Hofmann discloses a blend comprising polyvinylbutyral, polyvinyl chloride and an ethylene-based copolymer as a compatibilizer, column 2, lines 10-67. An ethylene-based compatibilizer having carboxyl functional group is readable in applicant's claims for being a crosslinking agent for polyvinyl butyral. All ingredients were added to the mixer except the PVC, column 5, lines 49-50. The crosslinking effect for PVB is readable in this step in Hofmann invention. Than, added polyvinyl chloride, claim 9 at column 10. The claimed continuous phase is readable in Hofmann invention.



8. It would have been obvious to one of ordinary skill in the art to add polyvinyl chloride as by teaching in Hofmann invention in to thermoplastic elastomer composition in Lenox invention for the purposes of increasing impact strength, abrasion resistance and decrease cost of the thermoplastic elastomer composition, and, thereby obtain the claimed requirement, since any additional thermoplastic polymer would be expected in Lenox invention for making a product having desired physical properties, wherein the claimed continuous phase are readable in both references invention.

9. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 853 097.

10. EP 0 853 097 (hereinafter EP'097) discloses polyvinylbutyral and polymer having polar moiety including polyethylene methacrylic acid and polyethylene vinyl acetate, and mixture thereof, page 3, column 3, lines 1-13. The polymer having polar moiety is readable for being a crosslinking agent. The polyvinylbutyral is readable for being polyvinylbutyral having hydroxyl functionality wherein the hydroxyl groups are inherently present in light of the nature of a chemical structure of PVB. The composition can be prepared by melt mixing of the ingredients in the extruder forming the homogeneous blends=reacted blend, page 3, column 4, lines 5-6 and column 3, line 22. The "reacted blend" is within the scope of crosslinking polyvinylbutyral. The obtained composition is non-sticky. The composition includes a non-polar polymer including polyethylene and polypropylene, column 3, line 33, for the claimed thermoplastic polymer. The process condition in EP'097 is readable in the present claims.

11. The difference is that EP'097 does not disclose call continuous phase wherein the crosslinked PVB is dispersed as a discrete phase in the continuous phase of the thermoplastic elastomer composition. It would have been obvious to one having ordinary skill in the art to use a process condition for producing a thermoplastic elastomer composition in EP'097 such that the formation of discrete form of crosslinked PVB and a formation of a continuous phase are obtained in EP'097 since the "continuous phase" is a mixture of the ingredients in the extruder that can have the same results, because it is the same meaning within the different wording under the same condition "mixing".

### ***Response to Arguments***

12. Applicant's arguments filed 09/24/2007 have been fully considered but they are not persuasive. The argument that Lenox does not disclose a dispersion of discrete phase of the crosslinked PVB in a continuous phase is not persuasive. Referring to the present specification at page 6 for working example, the ingredients were blended in a mixer at 200 C under agitation rate blending between 100 and 150 rpm until the mixture becomes homogeneous. The term "homogeneous" is uniform in composition and structure," from the dictionary. The temperature of the mixing the ingredients is depending on the selected thermoplastic polymer. The argument that Lenox discloses a "molecular blending" is not persuasive, because Lenox discloses "molecular blending" for the specified ingredients at column 3, lines 49-63. Lenox discloses a mixture to be carried out at above 250 F, column 3, line 54. The claimed PVC is readable in Lenox,

column 1, line 19. The "discrete phase" of PVB in the blend is depending on the selected thermoplastic polymer in the present claim 6. The PVC polymer is readable in Lenox.

13. The argument that Hofmann does not disclose crosslinked PVB is confusing. Hofmann does disclose functionalized ethylene such as carboxyl-functionalized ethylene polymer, column 3, line 18, as a crosslinking agent for PVB. The starting PVB is formed by well-known reaction between aldehydes and alcohols, column 2, lines 41-42. The starting PVB does contain hydroxyl groups. The PVB before crosslinking reaction does contain hydroxyl groups. The PVB and carboxyl-functionalized ethylene polymer in the blend creates a crosslinking reaction. Hofmann does disclose uniform domains of PVB dispersed in the matrix of other polymers, column 4, lines 1-15.

14. Referring to EP 0853 097 to Ward, the argument about "hydrogen bond" in Ward invention is not persuasive, since said "hydrogen bond" nor "covalent bond" does not readable in the present claims nor in the present specification.

### ***Conclusion***

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga Asinovsky whose telephone number is 571-272-1066. The examiner can normally be reached on 9:00 to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Application/Control Number:  
10/721,531  
Art Unit: 1796

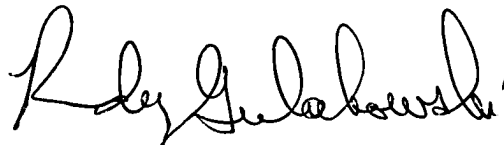
Page 12

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

O.A.

November 29, 2007  
December 06, 2007

Olga Asinovsky  
Examiner  
Art Unit 1796



RANDY GULAKOV  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700